

Chapter 14 – Shop Safety (REDACTED)

14.1 Purpose

This chapter provides general shop safety requirements for personnel employed by or working at Ames Research Center (ARC) not specifically covered in other chapters.

14.2 Applicability

This manual is applicable to: (1) all Ames Employees; and (2) all persons and entities who agree in writing to comply with this manual.

14.3 Authority

Safety requirements in this Chapter are primarily from the Occupational Safety and Health Act (OSHA) of 1970. The requirements of this public law are published as regulations in Title 29 of the Code of Federal Regulations, primarily in Part 1910. Other safety requirements or recommendations found in this chapter originated in National or International Safety Standards.

14.4 Responsibilities

14.4.1 Safety, Health and Medical Services Division

The Safety Division is responsible for the following:

- Provide technical safety evaluations of the shop work areas at the request of the shop supervisor.
- Maintain oversight of shop hazard assessment activities, safe work procedures, and employee training.
- Provide specialized safety training at the request of the shop supervisor and maintain training records.
- Provide specialized safety consulting upon request.

14.4.2 Ames Health Unit

- Provide medical consultation and examination relative to the employee's ability to conduct the shop work assignment, as referred by his/her supervisor.
- Provide specialty protective equipment (e.g. prescription safety glasses) to qualified government employees.

14.4.3 Branch Chiefs

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14.4.4 Supervisors

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14.4.5 Employees

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14.5 General Shop Safety Concepts and Requirements

The shops supporting ARC activities contain a number of inherent personnel safety hazards. Hazards may exist from potential energy sources (e.g., electrical power, compressed gases, hot/cold items, suspended items, large amounts of stored liquids, or flammable materials), mechanical systems (e.g., transverse/rotating equipment, power transmission devices, lifting equipment), hazardous materials (paints, lubricants, solvents), and structural features (sharp edges, slip/trip hazards, etc.).

A variety of controls, both mechanical and administrative, have been applied to shop hazards to either eliminate them or minimize the risk to personnel. The requirements of this chapter consist of general operating safety rules and guidelines that complete the list of typical controls applied to mitigating shop hazards. Additional requirements applied to address unique hazards are posted in each shop area, contained in the respective training programs, addressed in work procedures, or identified through the shop supervisor.

14.5.1 General Shop Safety Rules

Many occupational injuries occur due to unsafe work practices or flawed procedures. Personnel injuries are rare in locations where equipment is maintained in good operating condition and operated correctly, workers are adequately trained, and all personnel comply with safety rules and display a committed attitude toward safety. The shop rules specified in this chapter are intended to provide a safe environment in which to work and they must be followed. However, if a situation does not appear to be safe, the supervisor must be notified prior to conducting the work. A fundamental responsibility of a supervisor is to develop and establish the procedures to be used, and to enforce the use of those procedures. To be effective, shop procedures must be in writing, employees must be trained in the use of the procedures, and the procedures must be readily available for reference. Shop rules are a list of actions, or prohibition of actions, intended to ensure shop safety and product quality. Shop rules should be prominently displayed and adherence to such rules enforced.

The following general rules of safe operation apply to all ARC shop operations:

1. Tools and equipment shall not be left unattended while parts are still in motion or machinery is in a "cocked" or midcycle status.
2. Operators must not wear jewelry, loose-fitting clothing, neckties, or other apparel that may become caught in machinery.
3. Eye protection must be worn while operating machine tools and at all times in designated eye protection areas.
4. Manual adjusting and gauging (calipering) of work must not be performed while a machine tool is in operation.
5. Do not attempt to lift heavy work. Obtain assistance or use hoists, shop lifts, or other lifting aids.

Use overhead cranes only when:

- Trained and authorized to operate the specific crane being used.
 - The load is secured safely.
 - Slings and other rigging equipment and accessories are checked for defects.
 - Personnel are warned and through traffic is detained.
 - Assistance is available as needed.
6. Only the proper hand tools should be used. Tools should be kept in their proper location (such as a tool rack or rest).

7. Safe work procedures must be developed, posted, and enforced. Safe shop practices do not permit taking chances.
8. While working at or near exposed rotating machinery with hair of length such that it could become caught in the machinery, a cap that covers and contains the hair must be worn.
9. Safety shoes must be worn in designated areas. Metatarsal guards must be worn in designated areas and while performing specific tasks where injury potential to the top of the foot is high.

14.5.2 Specific Safety Practices

14.5.2.1 Hand Tools

1. Use the approved tool for the job. Makeshift arrangements such as the use of a screwdriver as a chisel, a pair of pliers as a wrench, a wrench as a hammer, or overloading a wrench by using a pipe extension (cheater bar) on the handle are not to be employed.
2. Use only tools that are in good condition and free from broken or splintered parts. Be sure that hammer heads are secure on handles.
3. Mushroomed heads on cold chisels, punches, hammers, etc. are to be ground down to avoid injury from flying particles.
4. Use suitable shields to cover the dangerous parts of sharp-edged or pointed tools. Standard tool belts, grunt bags, pouches, or boxes should be used for carrying tools. The use of pockets for this purpose is to be avoided.
5. Files and similarly constructed tools should be equipped with handles.

14.5.2.2 Powder-Actuated Tools

Powder-actuated nailing and stapling equipment used by carpenters, electricians, pipefitters, and other craft groups is essentially a firearm. The potential hazards inherent in this tool call for extreme care by a thoroughly trained operator. The use of this tool is subject to strict State regulations.

Operators of powder-actuated tools are required to possess a certificate of qualification issued by an authorized person. These certificates are issued only after completion of a course of training including the following safety instructions. Unqualified users of powder-actuated equipment can use the equipment for training purposes under the direct and constant supervision of a qualified operator.

Operators and their assistants using these tools must wear safety glasses or goggles.

When used in laboratory or office areas, notice must be given to all those nearby before the tool is fired. Persons in adjacent work places may be startled or even injure themselves when unexpectedly exposed to the noise generated by a powder-actuated tool.

The tool must be tested each day prior to loading to see that the safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

Tools must not be loaded until just prior to the intended firing time. Neither loaded nor empty tools should be pointed at anyone, and hands should always be kept clear of the open barrel end. Fasteners shall not be driven or attempt to be driven into high-tensile or hardened steel, cast iron, glazed tile or brick, hollow tile or other very hard or brittle materials.

Driving into soft materials must also be avoided unless backed by a material preventing complete penetration.

No fastening should be attempted close to corners or edges of material, into spalled areas caused by unsatisfactory fastening, or into existing holes in materials hard enough to produce deflection.

In case of a misfire, the tool must be held in the operating position for 30 seconds. After this time the action may be opened and the cartridge removed, provided that the muzzle and breech are not pointed in a direction that would be hazardous to anyone.

14.5.3 General Machinery and Shop Work

1. Do not operate any machine unless qualified and authorized by the shop supervisor to use it.
2. No machine is to be started unless all guards are in place. Machine guards may be removed only to make necessary adjustments and repairs while the machine is stopped and the power source is under the direct control of the operator. Guards are to be replaced before the equipment is placed back into operation.
3. Tool rests, tongue guards, and deflection shields should be properly adjusted before grinding wheels are operated. When chipping or using a portable grinder, utilize necessary portable shielding to protect other workers.
4. Wear goggles or equivalent whenever there may be danger or injury to the eyes from flying particles.
5. Equipment sent to the shop for repair containing other than known harmless chemicals should be thoroughly cleaned before repair work is started.
6. Securely fasten all work in lathes, drill presses, milling machines, and other similar equipment with adequate clamps, chucks, or jigs.
7. When working with hand tools, always secure the work in a mechanical vise. Never use the hands in place of such equipment.
8. Materials that are being worked in a lathe should have all protruding bosses, valves, nipples, etc. removed to the extent possible to avoid damaging the workpiece. The outer end of a protrusion should be marked with white tape to make its radius readily determinable.
9. In cases where protruding parts cannot be removed from materials being worked in a lathe, keep your hands in the clear.
10. When operating a power-driven machine, stop the machine whenever it is necessary to divert attention away from the workpiece.
11. Stop the machine when it is necessary to clean, oil, or adjust the equipment.
12. Never attempt to stop a machine by using the hand or any part of the body as a brake.
13. Before starting any machine, ensure the controls are set to run within safe specifications.
14. Chuck jaws must not extend out of the scroll so far that they will be sprung or dangerous under cutting pressure. Long lengths of stock extending beyond a lathe spindle must be supported to prevent whipping.
15. Never attempt to make electrical repairs. Ask your foreman to call an electrician.
16. Practical jokes, horseplay, wrestling, throwing objects, air hose games, loud unnecessary noises, or unusual commotion is positively forbidden.
17. Report unsafe or hazardous conditions to your supervisor.
18. Any slippery substance such as oil, grease, water, etc. spilled on the floor must be wiped up immediately.

19. Keep fingers away from moving machine parts. Never reach over dangerous moving parts or lean over the work so that hair or clothing can become entangled in rotating parts.
20. Use a brush or stick to remove chips from near a cutting tool. Never use hands or rags which could be caught by rotating or other moving parts. Compressed air may not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.
21. Energy sources must be controlled per Chapter 31: Lockout/Tagout, during maintenance and repair of equipment.

14.5.4 Magnesium and Other Pyrophoric Materials

The following safety precautions must be observed when using magnesium or other fire-hazardous or toxic materials:

1. Accumulation of magnesium chips on or around machines is forbidden. Clean accumulation often and place in a special container marked 'MAGNESIUM.' Keep the container in an open area.
2. Blowing chips with air is forbidden. This practice may produce a future fire-hazard potential.
3. Deliver the container with chips to a supervisor at the end of the shift for proper disposal.
4. While machining magnesium, keep a magnesium fire extinguisher in the immediate area for instant use. Review directions on the extinguisher before beginning machining operation.
5. Machine magnesium DRY. Never use moisture. On occasions some oils are permitted. Check with the supervisor.
6. Never use a vacuum cleaner for chip removal from the machine.
7. Any deviations from these procedures may be made only with supervisory approval.

14.5.5 Carpentry

The sharpness and high speed of the cutting tools employed in woodworking machinery can easily produce accidents unless great caution is observed in their use.

1. Never attempt to operate any machinery or equipment that is unfamiliar.
2. Use the proper tool for the job and keep tools sharp and in good condition.
3. Circular saws are to be equipped with suitable blade and kick-back guards. Guards are to be engaged at all times while the blade is in motion.
4. On applications where injury to the operator might result if motors (on wood working machinery) were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power.
5. Always use a feed or pusher-stick when feeding stock or narrow stock against power-driven saws or cutters.
6. Power saws or similar equipment are not to be left unattended while running. Each machine is to be shut off immediately after finishing an operation.
7. When machines are not in use, the motor controller switch should be left in the "off" position.
8. Remove or bend over all nails in scrap lumber when dismantling wooden objects.

14.5.6 Plumbing

1. Take proper precautions when working in areas subject to high concentrations of harmful or combustible materials.
2. When working in laboratories, insist on the removal of all fragile equipment and hazardous chemicals from the immediate area.
3. Check all jobs involving chemical equipment with the individual in charge. Do not proceed until all hazardous chemicals have been removed and the system cleaned. Some systems may require inert blanketing due to the material previously stored in the system.
4. Carry pipe with the forward end high enough to clear the heads of other persons.
5. When pipe is long and/or difficult to control, or where more than one piece of pipe is being transported, a pipe cart should be used, or assistance requested from another employee.
6. Allow pipes containing steam and other hot materials to cool before working on them. If this is not possible, use gloves and take extra precautions to release pressure in lines before starting to work. For more information, refer to Chapter 31, Lockout/Tagout.
7. Never overload a wrench by using an extension or cheater bar.
8. Keep wrench teeth sharp and always face an adjustable wrench in the direction the handle is to turn.

14.5.7 Electricity

1. Electricians and qualified electrical workers must be familiar with the grounding practices, code requirements, and electrical standards commonly encountered in their work. For more information, see Chapter 11, Electrical Safety.
2. Deviations from standard practice should be discussed with and approved by the Supervisor.
3. Electrical Workers should always work from nonconducting surfaces, never from metal ladders or platforms.
4. Safety hats, rulers, and whenever possible, other tools should be nonconducting.
5. The switch controlling a building circuit or an equipment circuit must be opened locked and tagged out by each individual who undertakes alterations or repairs to those circuits. The circuit should then be tested with a suitable instrument to ensure it is not energized before work is started. For more information, see Chapter 31, Lockout/Tagout.
6. Hold-off tags and locks on opened switches must never be removed by anyone other than the individuals who originally attached them.
7. A tagged open locked out main breaker should not be closed again until everyone in the vicinity of all portions of the circuit has been determined to be in the clear.
8. Opened panel boxes and similar live equipment around an electrical job can create a hazard to others working in the area or passing by. The electrical worker must protect others by using appropriate barriers and/or warning signs.

14.5.8 Painting

1. Many paint and varnish thinners are flammable. Adequate precautions should be taken to avoid working around open flames or other sources of ignition.
2. Paint thinner and solvent must be stored in an approved flammable storage locker.
3. Paint-soaked rags must be collected in covered metal containers that are emptied daily into the outside waste rag container.

4. Guard against the possible toxic effect of paint ingredients. Wash hands and face before eating, drinking, or smoking. Avoid wearing paint-soaked clothing in contact with the skin.
5. When spray-painting with paints containing lead or other heavy metal, wear an approved respirator, preferably an airline respirator.
6. When spray-painting in a confined area without the use of a spray booth, wear an approved respirator rated for the paint formula and the atmosphere of the confined space.
7. Paint-spraying booths and the ventilating ducts are to be cleaned at frequent intervals to avoid the accumulation of heavy layers of paint dust and pigment.

14.5.9 Ladder Safety

Ladders must meet the safety requirements established in the following codes, published by the American National Standards Institute (ANSI). Copies of these standards are available from the Environmental Health and Safety Office:

- ANSI A 14.1, Safety Code for Portable Wood Ladders
- ANSI A 14.2, Safety Code for Portable Metal Ladders
- ANSI A 14.3, Safety Code for Fixed Ladders
- ANSI A 14.5, Safety Code for Portable Reinforced Plastic Ladders

14.5.9.1 Ladder Inspection

1. New ladders must be inspected to ensure safe condition prior to release for use.
2. Ladders should be inspected every three months. Ladders found to be defective should be taken out of service and repaired or destroyed. A record shall be maintained on the results of inspections for each ladder according to the following checklists:
3. Ladder Defect Inspection Checklists:

General

- Loose steps or rungs (considered loose if they can be moved at all with by hand)
- Loose nails, screws, bolts, or other metal parts
- Cracked, split, or broken uprights, braces, steps, or rungs
- Splinters on uprights, rungs, or steps
- Damaged or worn nonslip bases
- Warning labels not attached or not readable

Stepladders

- Wobbly (from side strain)
- Loose or bent hinge spreaders
- Stop on hinge spreaders broken
- Broken, split, or worn steps
- Loose hinges
- Broken or damaged cross bracing

Extension Ladders

- Loose, broken, or missing extension locks
- Defective locks that do not seat properly when the ladder is extended
- Deterioration of rope, from exposure to acid or other destructive agents

Trolley Ladders

- Worn or missing tires
- Wheels that bind
- Floor wheel brackets broken or loose
- Floor wheels and brackets missing
- Ladders binding in guides

- Ladder and rail stops broken, loose, or missing
- Rail supports broken or section or rail missing
- Trolley wheels out of adjustment

Trestle Ladders

- Loose hinges
- Wobbly
- Loose or bent hinge spreaders
- Stop on hinge spreader broken
- Center section guide for extension out of alignment
- Defective locks or extensions

Sectional Ladders

- Worn or loose metal parts
- Wobbly

Fixed Ladders

- Loose, worn, or damaged rungs or side rails
- Damaged or corroded parts of cage
- Corroded bolts and rivet heads on inside metal stacks
- Damaged or corroded handrails or brackets on platforms
- Weakened or damaged rungs on brick or concrete slabs
- Base of ladder obstructed

Fire Ladders

- Markings illegible
- Improperly stored
- Storage obstructed

14.5.9.2 Ladder Storage

1. Ladders should be stored where they will not be exposed to the weather and where there is good ventilation. They should not be stored near radiators, stoves, or steam pipes or in other places subjected to excessive heat or dampness.
2. Ladders can be hung on brackets against a wall, with more than two supports for long ladders to prevent warping, or placed on edge on racks or on rollers, rather than stored flat. These methods will facilitate removal of ladders.
3. It is sometimes advisable to provide a chain and lock to keep ladders where they are needed and to prevent use by unauthorized personnel. Ladder storage space should be kept free of obstructions and accessible at all times, so that ladders can be obtained quickly in case of emergency.

14.5.9.3 Use of Ladders

1. Workers should observe the following practices when placing ladders:
2. Place a ladder so that the horizontal distance from the base to the vertical plane of the support is approximately one-fourth the ladder length between supports. (For example, place a 12-foot ladder so the bottom is 3 feet away from the object against which the top is leaning.)
3. Do not use ladders in a horizontal position as runways or as scaffolds. Single and extension ladders are designed for use in a nearly vertical position and cannot be safely used in a horizontal position or with the base at a greater distance from the support than that noted above.

4. Never place a ladder in front of a door that opens toward the ladder unless the door is locked, blocked, or guarded.
5. Do not place a ladder against a windowpane or sash. Securely fasten a board (not with nails) across the top of the ladder to give a bearing at each side of the window. On wide windows with metal sash, the bearing may be across the mullions or between the window jambs.
6. Place a portable ladder so that both side rails have secure footing. Provide solid footing on soft ground to prevent the ladder from sinking.
7. Place the ladder feet on a substantial and level base, not on movable objects.
8. Never lean a ladder against unsafe backing, such as loose boxes or barrels.
9. When you use a ladder for access to high places, securely lash or otherwise fasten the ladder to prevent its slipping.
10. Secure both bottom and top to prevent displacement when using a ladder for access to a scaffold, and extend the ladder side rails at least 3-1/4 feet above the top landing.
11. Do not place a ladder close to live electric wiring or against any operational piping (acid, chemical, sprinkler system, etc.) where damage may occur.
12. Ladder use shall be restricted to the purpose for which the ladder is designed.

14.5.9.4 Ascending or Descending Ladders

Workers should follow these safe practices when ascending or descending ladders:

1. Hold on with both hands when going up or down. If material must be handled, use a lift rope.
2. Always face the ladder when ascending or descending.
3. Never slide down a ladder.
4. Before climbing, shoes should be checked to ensure they are not greasy, muddy, or slippery.
5. Do not climb higher than the third rung from the top on straight or extension ladders or the second tread from the top on stepladders.
6. Do not use the cross bracing on the rear section of stepladders for climbing.

14.5.9.5 Other Safe Practices

1. Do not use makeshift ladders, such as cleats fastened across a single rail.
2. Be sure a stepladder is fully open before starting to climb it.
3. Before using a ladder, inspect it for defects.
4. Never use a defective ladder. Tag or mark it so that it will be repaired or destroyed.
5. Do not splice short ladders together. They are not designed for use in greater lengths.
6. Keep ladders clean and free from dirt and grease, which might conceal defects. Protect ladders from paint overspray, and do not paint ladders. (Defects may be concealed).
7. Do not use ladders during a strong wind except in an emergency and then only when they are securely tied.
8. Do not leave placed ladders unattended, especially outdoors, unless they are anchored at top and bottom.

14.5.9.6 Electrical Hazards and Metal Ladders

Metal ladders are electrical conductors. They should not be used around exposed electrical conductors or in places where they may come in contact with electrical circuits. The importance of the electrical hazards cannot be overemphasized. All personnel using metal ladders must be warned of the danger. In addition to this warning, metal ladders must be marked with signs or decals reading:

CAUTION - Do Not Use Around Electrical Equipment.

14.5.10 Personnel Protection Areas

Supervisor Responsibility:

When supervisors have identified the hazards associated with operations in the shop, they must then specify the protective equipment required for personnel working in the shop. They may also designate the shop itself, or portions of it, as an area requiring protection of one type or another, for any personnel who enter it. The supervisor is expected to refer technical and regulatory questions to the Safety Division (Code QH). Specific requirements for PPE are provided in Chapter 33, Personal Protective Equipment.

In general, the following protective features should be considered in every shop situation:

1. **Head Protection** - When head hazard conditions are inherent in the work situation, the area should be designated as a Hard Hat Area. A rack with hard hats may be installed at the entrance(s) to the area.
2. **Eye/Face Protection** - Areas with a number of machine tools or tools that are essentially in continuous use should be designated as Eye Protection Areas. Eye protection in such areas is required of all personnel, not just the operator. Eye protection areas should be clearly identified by signs and all eye protection areas within rooms shall have the boundaries conspicuously marked (e.g., yellow tape on the floor). Safety glasses (or goggles, where appropriate) should be provided. Where flying objects could also involve a hazard to the face, face shields should be specified.
3. **Protective Clothing** - Areas where protective clothing is required shall be identified with appropriate signs. The type of protective clothing required in any area will, in large measure, dictate the practicality of providing such clothing to visitors, and may necessitate designation as a restricted area.
4. **Hearing Protection** - Employees and visitors must be provided hearing protection prior to entering areas with a noise level of 85 dBA or more
5. **Foot Protection** - Foot protection may be required for employees who are exposed to foot injuries from hot, corrosive, or toxic substances, falling objects that may cause injuries, or who are required to work in abnormally wet locations. Footwear that is defective or inappropriate to the extent that its ordinary use creates the possibility of foot injuries must not be worn.
6. **Respiratory Protection** - Respirators may be required for protection against a variety of airborne contaminants such as particulates (welding fumes), organic vapors (paints), wood dusts, and sensitizing agents. The Safety Office should be consulted for a determination of the need and type of respirators required for specific situations.
7. **Operator Protection** - Other special devices may be required to protect operators in specific tasks. Examples are gloves, aprons, chaps, light filters, etc. The Safety Office should be consulted to determine the need and type of protective devices required for specific situations.

14.5.11 Smoking Restrictions

Whenever a supervisor or the Safety Office determines that fumes or dust create a potential hazard in an outside work area, the area should be considered a "No Smoking Area." Measures should also be taken to remove the source of the dust or fumes. No smoking areas should be designated with prominent posters. Smoking is not permitted inside any building.

Areas that contain stored compressed gases shall be posted as "No Smoking Areas." Also, areas where flammable or explosive gases or liquids are used shall be designated as "No Smoking Areas." Reasonable arrangements should be provided for employees who smoke in order to avoid surreptitious smoking.

14.5.12 Maintenance of Equipment and Work Area

Accidents are an inevitable consequence of a disorderly work area and of tools that are not in good condition. The conditions and environment that enhance safety also enhance efficiency and quality. Therefore, shop work areas shall be maintained free of housekeeping hazards and shall be clean and orderly. All mechanical equipment shall be well maintained to ensure that it does not present a hazard during operation.

14.6 Safety Training

Supervisors are required to ensure that all employees are adequately trained to conduct their work assignments safely. Safety training may include formal classes, written tests, reading assignments, one-on-one discussions, on-the-job training, and skill demonstrations. Supervisors should identify and document the safety training requirements for each employee or task for which they are responsible.

Training frequency will vary with respect to the nature of the work environment and the skill/knowledge level required to be maintained. Supervisors should determine whether initial training is sufficient or if periodic training is required to maintain the desired level. Documentation of all training activities is essential. Documentation includes the subject of the training, date, trainer's name, length of training, and the personnel trained.

New employees (including personnel reassigned from other shops, summer students, and other inexperienced people) require training to indoctrinate them in the work methods and safety practices established by the shop supervisor. To effectively and consistently achieve a high level of safety awareness, it is important that new people be trained in the safe aspects of their work. In some cases, it may be desirable to certify individuals for shop tasks that have unusual hazards or require unusual skills.

No employee may perform work with hazardous materials, hazardous wastes, radioactive wastes, and lasers or in hazardous locations (e.g., confined spaces) without designated safety training.

14.7 References

- Supervisors Safety Manual, 10th Edition, 1992, National Safety Council, Chicago, Illinois 60611.
- Accident Prevention Manual for Industrial Operations, 10th Edition, 1992, National Safety Council, 444 North Michigan Avenue, Chicago, Illinois 60611.
- ANSI 01.1-1992, Woodworking Machinery - Safety Requirements
- ANSI A14.1-2000, Portable Wood Ladders - Safety Requirements
- ANSI A14.2-2000, Portable Metal Ladders - Safety Requirements
- ANSI A14.3, Fixed Ladders - Safety Requirements
- ANSI A14.5, Portable Reinforced Plastic Ladders Requirements
- ANSI Z535.2-1991, Environmental and Facility Safety Signs
- 29 CFR 1910 General Industry, Occupational Safety and Health Administration
- 8 CCR, CAL-OSHA, Division of Industrial Safety, State of California